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GEOLOGY OF THE HYDER AREA, SOUTHEAST ALASKA

Compiled by DGGS Staff
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CORRELATION OF MAP UNITS

Qa	Qt	Qm	Quaternary
Thg	Th	Eocene	
Jtp	Jt		Lower Jurassic
JThu	JTha	Lower Jurassic or Upper Triassic	

UNCONSOLIDATED DEPOSITS

Qa Alluvium—Well-sorted pebble to cobble gravel and sand with few to numerous boulders beneath modern flood plains, medium- to thick-bedded, locally coarse-bedded. Surface is smooth except for low scarps.

Qt Talus—Unsorted mixtures of angular rock fragments, gravel, sand, and silt deposited at the mouth of bedrock couloirs by snow avalanches, free fall, tumbling, rolling, and sliding. Typically cone- or apron-shaped and covered by numerous angular boulders.

Qm Moraines—Heterogeneous mixtures of gravel, sand, and silt deposited directly from glacial ice. May be locally reworked by meltwater and debris flows. Generally massive-bedded, except thin- to thick-bedded where reworked by stream action.

INTRUSIVE ROCKS

HYDER PLUTONIC SUITE—Medium- to coarse-grained, hydromorphic equigranular, golden sphen-bearing biotite granodiorite to granite, +/- hornblende, locally with porphyritic relict. This suite is characterized by white to light gray, massive, unfoliated outcrops and accessory sphen that forms subhedral crystals that are visible in most hand specimens as tiny golden grains. These rocks are biotite rich, more siliceous and less altered than those from the Jurassic, Texas Creek plutonic suite. Chemically these rocks plot as subalkaline, calc-alkaline granites to granodiorites on discriminant diagrams of Cox and others (1979) (Aldrick, 1993). The Hyder plutonic suite hosts numerous molybdenum, silver, lead, zinc, gold and tungsten showings throughout the district.

HYDER GRANITE—Coarse-grained biotite-hornblende sphen-bearing granite with lesser amounts of coarse-grained biotite granodiorite and minor asakite. Apatite and pegmatite dikes are common in this phase. Biotite is subhedral and skeletal.

HYDER GRANODIORITE—Medium- to coarse-grained biotite hornblende, sphen-bearing granodiorite. Dominant lithology within the Hyder plutonic suite. Biotite and hornblende are present in about equal amounts, biotite is euhedral. Characterized by lack of xenoliths or inclusions. Age 48.8 +/- 2 Ma K-Ar hornblende (Aldrick, 1993).

BOUNDARY GRANODIORITE—Medium-grained biotite hornblende sphen-bearing granodiorite with granitic phases. Characterized by inclusions of country rock and fine-grained mafic xenoliths. In general, finer grained and more inequigranular than the Hyder granite and granodiorite. Age 50.8 +/- 2 Ma K-Ar hornblende (Aldrick, 1993).

HYDER DIKES—Felsic dike—Pegmatite porphyritic biotite hornblende granodiorite. Light gray or green, chalky white where altered. The mafic minerals are commonly altered to chlorite, opaque minerals, and epidote. Sphen is common accessory. Few meters to hundreds of meters thick. Hyder dikes are subvolcanic, andesitic to dacitic, and are associated with the Hyder plutonic suite. Age 54.8 +/- 1.3 Ma U-Pb zircon (Aldrick, 1993).

TEXAS CREEK PLUTONIC SUITE—Dominant composition is hornblende-biotite granodiorite to quartz monzonite, but can include more mafic and more felsic monzonites. Believed to have been emplaced within a shallow subvolcanic setting below and within an Early Jurassic andesite and dacite province (Aldrick, 1993), and underlies much of the Hazelton Group exposures in the map area. Has been affected by one or more episodes of regional metamorphism and is altered. Has been affected by one or more episodes of regional metamorphism and is altered. Has been affected by one or more episodes of regional metamorphism and is altered.

TEXAS CREEK DIKES—Coarse-grained, orthoclase hornblende porphyritic granodiorite. Several meters to tens-of-meters thick. Age 189.2 +/- 2.2 Ma U-Pb zircon (Aldrick, 1993).

PREMIER PORPHYRY—Orthoclase porphyritic granodiorite, +/- hornblende, fine grained to aphantic groundmass that is commonly altered to sericite, chlorite, carbonate, and pyrite. Dike phase of the Texas Creek plutonic suite that is associated with the major ore zones at the Silbak Premier mine in nearby British Columbia. Also noted to form flows (Aldrick, 1993). Weather green to greenish gray. Age 194.8 +/- 2 Ma U-Pb zircon (Aldrick, 1993).

TEXAS CREEK GRANODIORITE—Medium to coarse-grained equigranular hornblende granodiorite with up to 15 percent euhedral hornblende. Hornblende is commonly altered to chlorite. A younger, porphyritic phase has been recognized to the east, in British Columbia (Aldrick, 1993). Age 206.5 +/- 6 Ma K-Ar hornblende (Aldrick, 1993).

VOLCANIC AND SEDIMENTARY ROCKS

HAZELTON GROUP—Within the map area, this thick sequence of volcanoclastic rocks comprises the Upper Triassic to Lower Jurassic (Norian to Pliensbachian) Unuk River Formation, which is the oldest member of the Hazelton Group as defined by Grove (1973, 1986) and used by Aldrick (1993) in the adjacent Stewart mining camp in British Columbia. Dominant lithologies include interbedded dust tuff, tuff breccia, volcanic graywacke, and argillite. Less common are coarse tuff breccia, coarse volcanic conglomerate, thin andesitic flows, and dark blue-gray marble. Graded bedding and the presence of marble lenses indicate aqueous deposition. These rocks have been subjected to at least one period of low-grade regional metamorphism and subsequent contact metamorphism by intrusion of Texas Creek and Hyder plutonic suites.

These rocks crop out in the western and eastern map areas. To the west, at the head of Texas Creek, exposures of Hazelton Group rocks are thought to be the remnants of an arched roof over the Texas Creek granodiorite (Smith, 1977). Exposures to the east cover a much larger area, extending into British Columbia and host numerous gold deposits. In the vicinity of Fish Creek and the international boundary, exposures are extremely altered and chlorite altered and have been mapped as calcalkalites by Smith (1977). Northwest-trending Hyder dike swarms include the unit in the Mt. Walker and Mineral Hill areas.

Dust tuff, argillite—Predominantly green, fine-grained dust tuff and gray argillite, some interbedded ash tuff, volcanic graywacke and siltstone.

Argillite, siltstone—Banded, thin-bedded argillite, siltstone, sandstone, and minor conglomerate +/- dust tuff, ash tuff.

Calcareous argillite—Calcareous, carbonaceous thin- to medium-bedded argillite, siltstone, local marble lenses.

Marble—Dark blue-gray marble.

Tuff, hematitic sediments—Dust, ash, crystal and lapilli tuff, and tuff breccia with local welded tuff, intercalated hematitic sediment lenses.

Tuff—Dust, ash, crystal, and lapilli andesite tuff, volcanic graywacke, andesite tuff breccia, local thin andesite flows.

Hazelton Group undifferentiated.

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MAP SYMBOLS

—	Contact	—	Strike and dip of foliation
- - -	Fault, dashed where approximately located, dotted where covered. Arrows show apparent direction of movement.	—	Inclined
—	As photo lineament (assumed fault)	—	Vertical
—	Strike and dip of joints	—	Strike and dip of dikes
—	Inclined	—	Inclined
—	Vertical	—	Vertical
—	Strike and dip of bedding	—	Strike and plunge of mineral lineation
—	Inclined	—	Glacier or permanent snowfield
—	Vertical	—	Major oxide sample location
—	Horizontal		

Location of Map Area

Map showing the location of the Hyder area in Southeast Alaska, relative to the Gulf of Alaska, the Alaska Peninsula, and the Canadian border. The map includes the locations of the Hyder area, the Gulf of Alaska, the Alaska Peninsula, and the Canadian border.

COMPILATION INDEX

Map showing the compilation index of the Hyder area, Southeast Alaska, relative to the Gulf of Alaska, the Alaska Peninsula, and the Canadian border. The map includes the locations of the Hyder area, the Gulf of Alaska, the Alaska Peninsula, and the Canadian border.

Sources of Data

Map showing the sources of data for the Hyder area, Southeast Alaska, relative to the Gulf of Alaska, the Alaska Peninsula, and the Canadian border. The map includes the locations of the Hyder area, the Gulf of Alaska, the Alaska Peninsula, and the Canadian border.

Legend

Map showing the legend for the Hyder area, Southeast Alaska, relative to the Gulf of Alaska, the Alaska Peninsula, and the Canadian border. The map includes the locations of the Hyder area, the Gulf of Alaska, the Alaska Peninsula, and the Canadian border.